Digital Learning Group

HackOrbit 2025

QuadCore

THEME: Artificial Intelligence and Machine Learning

PROBLEM STATEMENT:

In India, approximately 30% of all mortalities are linked to delays in emergency health care.
Accidents that occur late at night often go unnoticed for a significant amount of time due to the absence of witnesses. Despite the presence of CCTV cameras almost everywhere, there is no system in place to automatically detect such incidents, assess their severity, and promptly alert emergency services. This critical delay in response time can lead to preventable fatalities.

PROPOSED SOLUTION

Our solution- SafeSight is an emergency accident detection system which detects road accidents via CCTV footage using image and video processing and notifies nearby hospitals and police stations in a timely manner.

Detects road accidents through CCTV cameras along with its severity, making use of image and video processing models

For severe accidents, the nearest hospitals are directly asked to dispatch an ambulance.

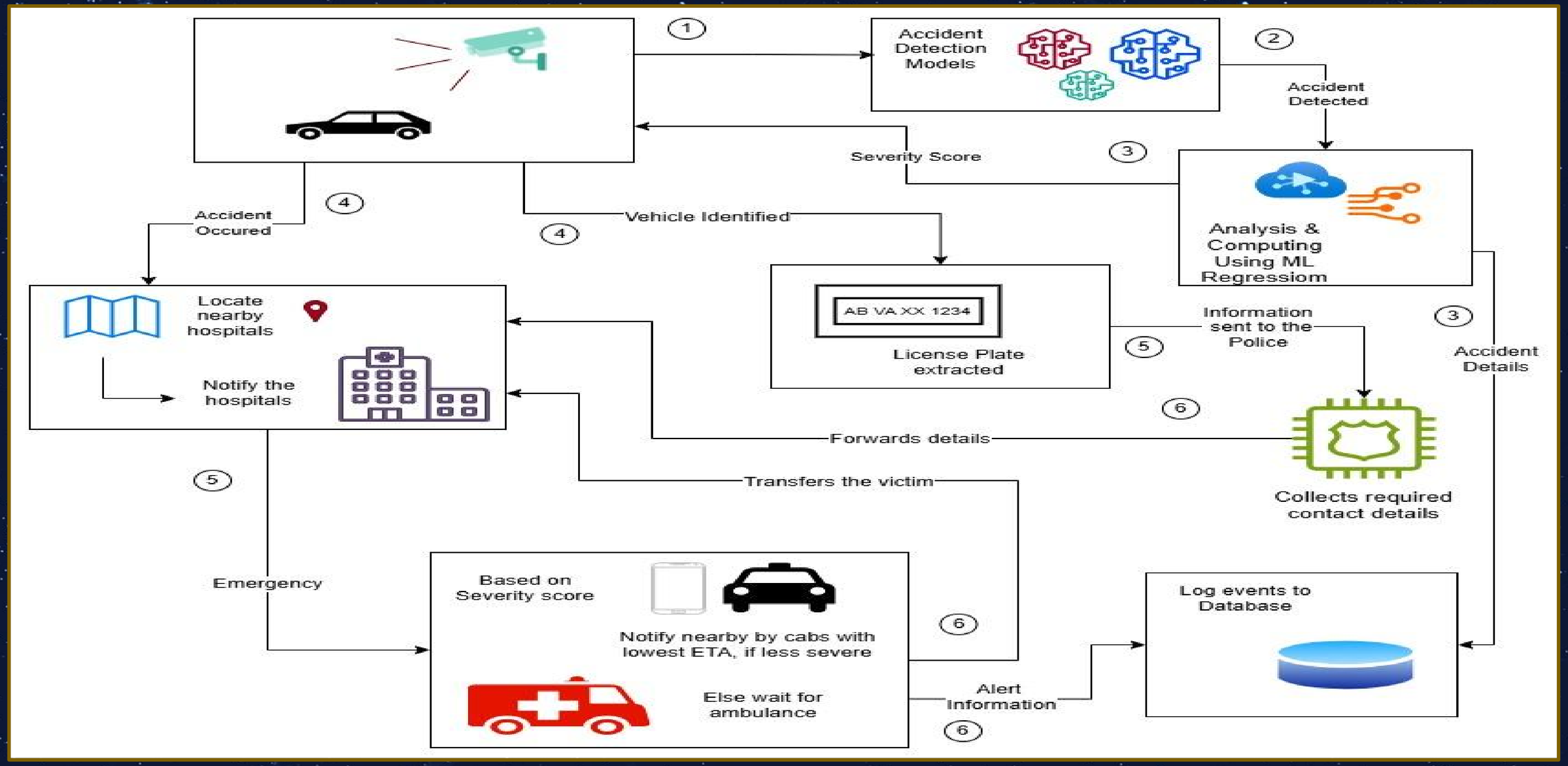
On accident detection, the nearby hospitals are alerted with essential details being sent directly to the hospitals' dashboard

For less-severe accidents, nearby autos and taxi drivers are notified and awarded with incentives if taken up

The closest police station is also notified with information including the number plate details of the vehicles involved

FLOWCHART/DIAGRAM

ARCHITECTURE



FLOWCHART/DIAGRAM

1. Vehicle, Human, Object Detection
Detects vehicle types, pedestrians, fire, smoke from CCTV frames

2. Object Tracking & Speed Estimation
Tracks object displacement, calculates speed

3. Accident Detection
Triggered by collisions, fire, fallen persons, sudden displacement, or deceleration

4. Severity Score Estimation
Input: vehicle type, object count, speed, displacement, fire or smoke

5. Number Plate Recognition
Identifies license plate and extracts text for each vehicle involved

6. Location Detection
Maps camera or device coordinates to actual accident location

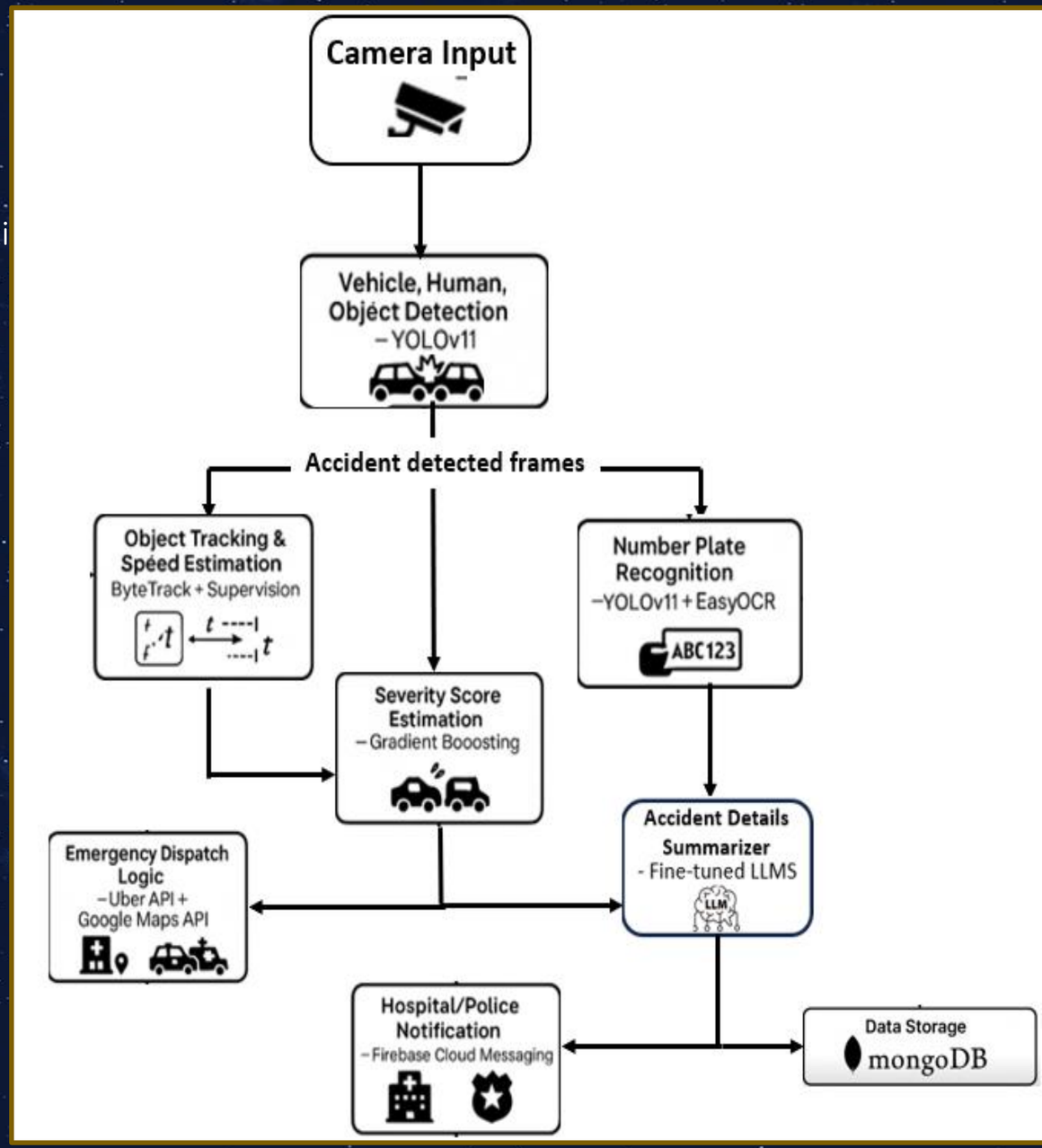
7. Accident Summary/Details
Provides a text summary of the accident with the above details

8. Emergency Dispatch Logic
Score <3: Notify nearby autos, cabs, hospitals for ambulance
Score ≥ 3: Notify hospitals and wait for ambulance only

9. Hospital/Police Notification
Sends report: severity speed, number plate, types & count of vehicles,, location

10. Database Storage
Storing the accident details in the database for future enquiries

METHODOLOGY



FEATURES AND NOVELTY

AI – Driven Accident Detection & Assistance Platform transforms existing CCTV infrastructure into an intelligent accident detection system

- ➢ Eliminating the need for new hardware installation
- ➢ Leverages real-time image and video analysis to autonomously detect accidents.

Instantly alerts the nearest hospital with critical data such as location, time, and severity ~ ensures timely medical intervention

Forwards number plate details to the nearest police station --> Quickly identify and contact the victim's family using linked contact information

Notify nearby vehicles (like autos or cabs) to assist with transporting victims of low-severity accidents..

- ➢ Ensures rapid action even in resource-constrained or remote environments

DRAWBACK AND SHOWSTOPPERS

- Lack of clarity in existing CCTVs:

  Many of the existing CCTV cameras lack clarity in vision, which might pose an issue in detecting the severity and license plate number of the accidents

- Lack of existence of CCTV cameras in rural areas

  Many remote and rural areas lack CCTV cameras so this idea might be useful only for those regions with CCTV access

- Weather and Lighting Conditions

  Factors like heavy rain, fog, or nighttime low light can affect video clarity. These may reduce the accuracy of accident detection in some scenarios.

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Thank you